

## Milling and Planing Machine Setters, Operators, and Tenders

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### What They Do

Milling and Planing Machine Setters, Operators, and Tenders set up, operate, or tend milling or planing machines to mill, plane, shape, groove, or profile metal or plastic work pieces. Milled pieces are used to manufacture everything from plastic plumbing parts to the bolts, nuts, and screws used to assemble other products. Milled parts could be tiny or large and heavy. As with other manufacturing machine technology occupations, workers usually begin as tenders and advance to operators. The most experienced workers are responsible for setting up horizontal and vertical mills and machining centers. They operate and inspect the first run and then turn the job over to an operator or tender. They maintain and repair the machine. Employers increasingly require computer numerical controlled (CNC) skills and experience. Employers sometime request experience on specific milling machine brands. Milling and Planing Machine Setters, Operators, and Tenders also inspect work to meet precise quality standards.

Employers often use the following job titles for Milling and Planing Machine Setters, Operators, and Tenders: Gear Milling Machine Set-Up Operator; Magnesium Mill Operator; Planer Type Milling Machine Set-Up Operator; Rotary Head Milling Machine Set-Up Operator; and Thread Milling Machine Set-Up Operator.

### Tasks

- ▶ Study blueprint, layout, sketch, or other specifications to determine materials needed, sequence of operations, dimensions, and tooling instructions.
- ▶ Compute dimensions, tolerances, and angles, of workpiece or machine according to specifications and knowledge of metal properties and shop mathematics.
- ▶ Make templates or cutting tools.
- ▶ Select and install cutting tool, stylus, and other accessories according to specifications, using hand tools or power tools.
- ▶ Select cutting speed, feed rate, and depth of cut, applying knowledge of metal properties and shop mathematics.
- ▶ Move controls to set cutting specifications, position cutting tool and workpiece in relation to each other, and start machine.
- ▶ Move cutter or material manually or by turning handwheel, or engage automatic feeding mechanism to mill workpiece to specifications.
- ▶ Turn valve to begin and regulate the flow of coolant on work area.

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- ▶ Observe machine operation and adjust controls to ensure conformance with specified tolerances.
- ▶ Record production output.

Detailed descriptions of this occupation may be found in the Occupational Information Network (O\*NET) at [online.onetcenter.org](http://online.onetcenter.org).

### Important Skills, Knowledge, and Abilities

- ▶ Equipment Selection — Determining the kind of tools and equipment needed to do a job.
- ▶ Production and Processing — Knowledge of raw materials, production processes, quality control, costs, and other techniques for maximizing the effective manufacture and distribution of goods.
- ▶ Mechanical — Knowledge of machines and tools, including their designs, uses, repair, and maintenance.
- ▶ Control Precision — The ability to quickly and repeatedly adjust the controls of a machine or a vehicle to exact positions.
- ▶ Information Ordering — The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).

### Work Environment

Milling and Planing Machine Tool Setters, Operators, and Tenders work indoors in machine shops and plants where temperatures are controlled. They are on their feet most of the day using their hands to control machinery. They must observe safety rules and be alert to the hazards of machinery constantly in motion. They often wear safety glasses, earplugs, and other protective equipment. They wear face masks equipped with breathing apparatus when toxic fumes or dust are present.

Some manufacturing plants operate around the clock, and workers may be required to work evening, night, or weekend shifts as well as overtime when needed. As workers obtain seniority, they have more choice about shift assignments. Union membership may be available in some industries.

### California's Job Outlook and Wages

The California Outlook and Wage table below represents the occupation across all industries.

Standard Occupational Classification	Estimated Number of Workers 2004	Estimated Number of Workers 2014	Average Annual Openings	2006 Wage Range (per hour)
<b>Milling and Planing Machine Setters, Operators, and Tenders (Metal and Plastic)</b>				
51-4035	3,200	3,100	60	\$11.27 to \$19.81

*Wages do not include self-employment.*

*Average annual openings include new jobs plus net replacements.*

*Source: [www.labormarketinfo.edd.ca.gov](http://www.labormarketinfo.edd.ca.gov), Employment Projections by Occupation and OES Employment & Wages by Occupation, Labor Market Information Division, Employment Development Department.*

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### Trends

The total number of Milling and Planing Machine Setters, Operators, and Tenders is expected to decline slightly between 2004 and 2014. Openings will occur as workers retire or permanently leave the occupation. Most openings now require computer numerically controlled (CNC) skills.

### Training/Requirements/Apprenticeships

Milling and Planing Machine Setters, Operators, and Tenders often are trained on the job in the basic skills. They start as a tender and then advance to operator and setter with experience. Community college or vocational school training programs in machine shop and machine tool technology are available in many areas of California. Use the *Training Information* feature on the *Career Center* page at [www.labormarketinfo.edd.ca.gov](http://www.labormarketinfo.edd.ca.gov) to identify training programs available in specific geographic locations.

### Recommended High School Course Work

High school students interested in this kind of work should take drafting and mathematics courses, especially trigonometry, as well as computer, metal, and machine shop courses when available.

### Where Do I Find the Job?

Direct application to employers remains one of the most effective job search methods. Candidates for training or apprenticeship programs should apply directly to employers who employ Milling and Planing Machine Setters, Operators, and Tenders.

Use the *Search for Employers by Industry* feature on the *Career Center* page at [www.labormarketinfo.edd.ca.gov](http://www.labormarketinfo.edd.ca.gov) to locate employers in your area. Search under the following industry names to get a list of private firms and their addresses:

- ▶ All Other Motor Vehicle Parts
- ▶ Aluminum Foundries (except Die-Casting)
- ▶ Bolts, Nuts, Screws, Rivets, and Washers
- ▶ Gasoline Engines and Engine Parts
- ▶ Iron and Steel Mills
- ▶ Machine Shops
- ▶ Metal Cutting Machine tool
- ▶ Motor Vehicle Power Train Components
- ▶ Other Engine Equipment
- ▶ Precision Turned Product
- ▶ Special Tools, Dies, Jigs, and Fixtures
- ▶ Turbine Generator and Generator Set Units

Search these **yellow page** headings for listings of private firms:

- ▶ Machine Shops
- ▶ Metal Cutting Tools
- ▶ Metal Fabricators
- ▶ Millwork
- ▶ Plastic Fabricators
- ▶ Sheet Metal Work

### Where Can the Job Lead?

Opportunities for advancement depend on the size of firm. With additional training, Milling and Planing Machine Setters, Operators, and Tenders can pursue Tool and Die Maker or Machinist positions. Workers trained in computer numerically controlled (CNC) skills should find excellent job opportunities.

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### Other Sources of Information

National Tooling & Machining Association  
[www.ntma.org](http://www.ntma.org)

National Institute for Metalworking Skills  
[www.nims-skills.org](http://www.nims-skills.org)

Precision Metalforming Association Educational Foundation  
[www.pmaef.org](http://www.pmaef.org)

Precision Machined Products Association  
[www.pmpa.org](http://www.pmpa.org)

The Society of the Plastics Industry  
[www.socplas.org](http://www.socplas.org)